

of the

BRITISH FIRE PREVENTION COMMITTEE—No. 202.

Edited by the Executive.

A REPORT
ON A
FIRE
AT THE
BON MARCHÉ (ANNEXE)
PARIS
ON
November 22nd, 1915

BY
ELLIS MARSLAND
District Surveyor
General Honorary Secretary.

FROM NOTES SUPPLIED
BY
COLONEL CORDIER
Commandant
Paris Fire Brigade Regiment.

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LONDON, 1915.

PUBLISHED AT THE OFFICES OF
THE BRITISH FIRE PREVENTION COMMITTEE
(Founded 1897—Incorporated 1899).
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PUBLICATIONS of the

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The Paris "Bon Marché" Fire (1915)

BEING

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Two Shillings and Sixpence.

OBJECTS OF THE COMMITTEE.

The main objects of the Committee are :

To direct attention to the urgent need for increased protection of life and property from fire by the adoption of preventive measures.

To use its influence in every direction towards minimizing the possibilities and dangers of fire.

To bring together those scientifically interested in the subject of Fire Prevention.

To arrange periodical meetings for the discussion of practical questions bearing on the same.

To establish a reading-room, library and collections for purposes of research, and for supplying recent and authentic information on the subject of Fire Prevention.

To publish from time to time papers specially prepared for the Committee, together with records, extracts, and translations.

To undertake such independent investigations and tests of materials, methods, and appliances as may be considered advisable.

The Committee's Reports on Tests with Materials, Methods of Construction, or Appliances are intended solely to state bare facts and occurrences, with tables, diagrams, or illustrations, and they are on no account to be read as expressions of opinion, criticisms, or comparisons.

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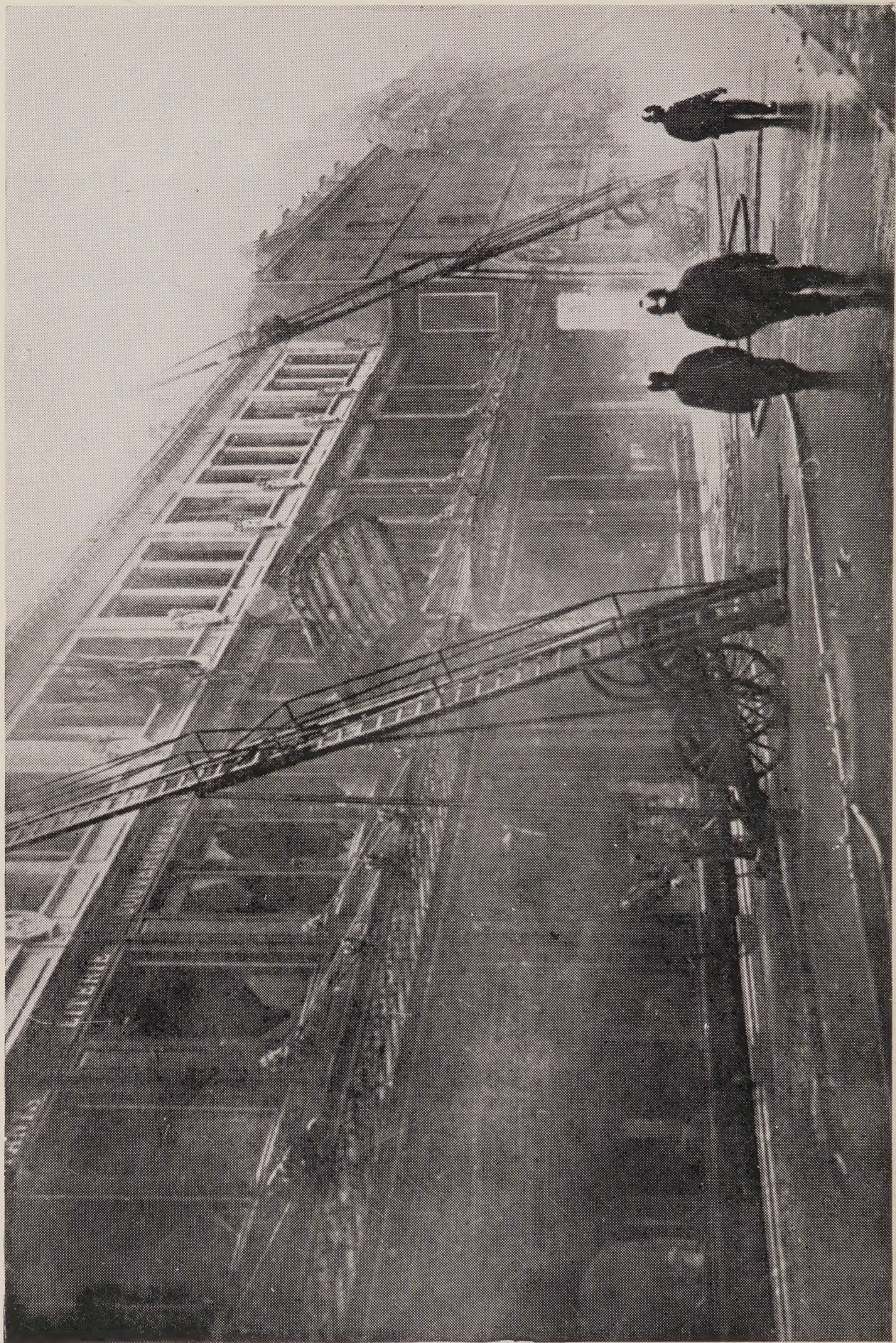
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NOTE.

The particulars of the Paris Bon Marché fire presented in this Red Book are based on some valuable memoranda that have been put at the disposal of the Committee by Colonel Cordier, Commandant of the Paris Régiment des Sapeurs Pompiers, an honorary member of this Committee.

The London Building Acts preclude the erection of a building such as the Bon Marché (Annexe) in the county of London, but we believe that there is nothing in the Building Regulations of many of our provincial centres or in the large cities of our Colonies to preclude the erection of a structure of this description.

The prevention of very large fires in buildings of this class in the metropolis has been largely due to the restrictions as to cubic contents contained in the successive Building Acts, and although those restrictions can be modified by special application to the London County Council, the premises upon which the restriction of cubic extent is waived are generally such as to ensure the use of the most modern forms of fire resisting construction, a most careful supervision of individual fire risks and the numerous safeguards provided by modern equipment, frequently including that of automatic sprinklers.

The Building Regulations in Paris are based on the responsibility of the owner, who is not only responsible to the State, but also to his neighbours, and there is little in the Building Regulations of Paris to define specific forms of construction or internal arrangement; also, if we are rightly informed, there is no limitation whatever to cubic extent. It is probably owing to these lesser limitations in building law that this more modern structure took the form indicated in the present description.

The fire that obtains a hold in such a vast structure as this one, spreads rapidly as a matter of course, and the conflagration that follows is only what is to be expected.

That this conflagration should, however, have been limited to the actual structure was a matter of congratulation and does great credit to Colonel Cordier and the Paris Fire Brigade.

The existence of an auxiliary military hospital on the premises, which had apparently been installed contrary to the recommendations of the authorities concerned, is a somewhat extraordinary feature.

Fortunately, however, certain safeguards had been installed when the hospital opened, and thanks to this provision there was no loss of life among the wounded or staff who occupied the hospital wards.

The description presented, together with illustrations, explain themselves, but it is due to the Bon Marché owners to say that their regular staff of private firemen and probably also several of their other general safeguards had been largely affected by the War Emergency, so that normal conditions could scarcely be said to prevail in the establishment at the time of the outbreak.

ELLIS MARSLAND.

8, *Waterloo Place, Pall Mall,*
London, 1916.

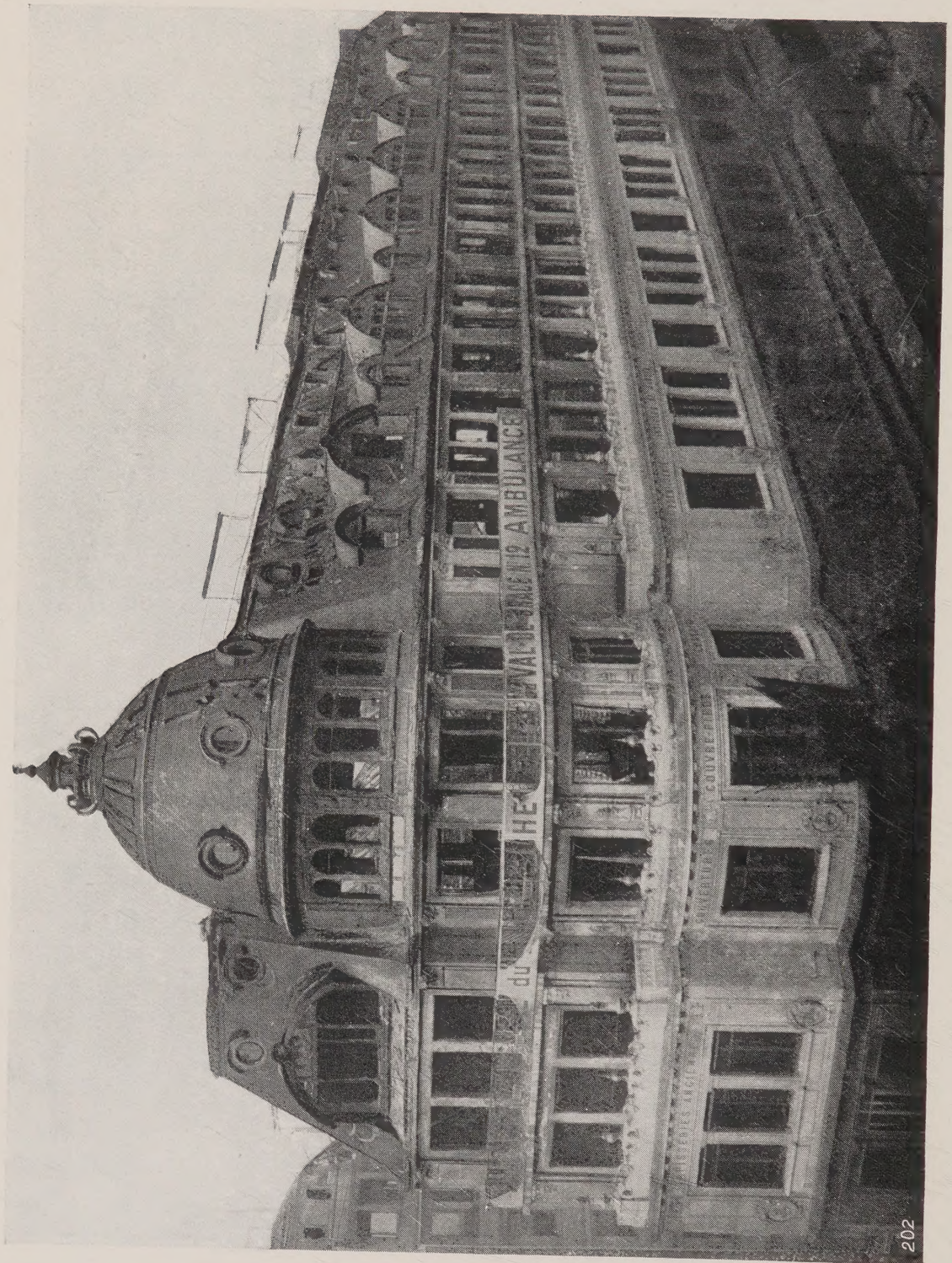


Fig. 2.—View of the Upper Floors of the Façade at the junction of the Rue du Bac and the Rue de Sèvres.

A REPORT ON A FIRE

AT

THE "BON MARCHÉ" (Annexe), PARIS

ON

November 22nd, 1915

THE BUILDING.

SITUATION OF THE BUILDING.

The building is situated at the corner of the Rue de Sèvres and the Rue du Bac, it adjoins on the eastern side the Laennec Hospital and on the northern side the Convent of the Sœurs de Saint Vincent de Paul, while on the western side, separated by the Rue du Bac, is situated the old main building of the Bon Marché to which the Annexe was connected by a subway under the street.

THE CONSTRUCTION OF THE BUILDING.

The building consisted of an under sub-basement, a sub-basement, a basement, ground floor, and six floors over, and comprised an area of about 5,000 square metres (*53,800 square feet*),

The building, which was of modern construction, erected in 1899. consisted of a stone façade with a large window surface and an interior of framed metal work, both cast and wrought. The floors were carried by iron joists, and were formed of rough brick arches in mortar, plastered on the underside, and with wooden floors; some of the floor beams and the wrought iron stanchions were protected by plaster, but the ornamental and other cast-iron work was unprotected.

The division walls were of brick, and the partitions of slab plaster and of wood.

In the interior the floors formed galleries surrounding two central halls, one of which was very large. (*See Fig. 9.*)

The roofs over these halls were of framed iron work and were glazed to a very large extent. The surrounding roofs were covered with slates or zinc.

In the cupola of the dome at the corner of the two streets was a reservoir of reinforced concrete of 40 cubic metres (1,412 cubic feet), which was undamaged.

The staircases were open. There were several lifts, from the bottom to the top of the building, some of which were surrounded by the staircases but were un-enclosed; there were also service lifts and shoots for the conveyance of parcels to the revolving parcels table in the basement.

The basement of the annexe communicated with the main building adjoining, by a subway under the Rue du Bac, extending for a distance of about two-thirds of the frontage of the annexe, and the openings from this subway into the annexe were protected by double revolving steel shutters.

In the sub-basement were three passages, about 1 metre by 0·8 metre (3ft. 3in. \times 2ft. 8in.), serving as conduits for electric cables and for the mechanism for the parcel service, but these openings were unprotected, in spite of the recommendations of the authorities.

In the under sub-basement there was a recess in the masonry, 3 metres by 2·50m. (9ft. 9in. by 8ft. 3in.), enclosing the transporter from the revolving table.

PRECAUTIONS AGAINST FIRE.

The precautions against an outbreak of fire were provided for by pipe lines of water under pressure with vertical services on each floor, to which were attached hydrants fitted with valves, hose, and jets. No sprinklers were installed.

A staff of private firemen was attached to the establishment, who had charge of the working of this apparatus, but at the time of the fire the staff had been depleted on account of mobilisation for the war.

It was also stipulated that no combustible materials should be stored in the subway under the street.

The oil tanks in the sub-basement were protected by pipe lines and sprinklers, attached to a container holding sulphurous anhydride.

USE TO WHICH THE BUILDING WAS PUT AND ITS CONTENTS.

The under sub-basement was low in height and not in use.

The sub-basement contained stocks of merchandise, household goods, garden tools and toys; it also contained the machinery room and tanks holding heavy oils—these latter were enclosed by a wall 0·3 metres (12ins.) thick and were specially protected as above described.

The basement contained space for the reception of goods, piles of wooden furniture, oil-cloths, paintings, etc., and a revolving table for the reception and manipulation of parcels.

The ground floor contained tapestries, china, works of art, and household goods.

The first floor furnishing materials.

The second floor Oriental carpets, ordinary carpets, and linoleums.



Fig. 3.—View of the interior of the Grand Hall, taken from the principal entrance in the Rue du Bac.

The third floor, furniture and bedding.

The fourth floor, stocks of linen.

The fifth floor was in use as a temporary hospital for wounded soldiers, and contained 130 beds.

The sixth floor was used for administrative purposes in connection with the hospital.

Note.—This hospital was installed in spite of the opposition of the fire service, but foreseeing that in the event of an outbreak of fire the premises would inevitably be enveloped in smoke, the precaution was taken, before the hospital was occupied, to enclose all the staircases, lifts, and service lifts which lead to the hospital portion of the premises with fire-resisting material, and isolated from the other parts of the premises and the communication doors on each storey kept locked.

THE FIRE.

THE ORIGIN AND PROGRESS OF THE FIRE.

On November 22nd, 1915, at 11.34 p.m. the alarm was sent through to the fire station in the Rue du Vieux Colombier, situated some 600 metres (650yds.) from the Bon Marché, by private alarm from the establishment, and the brigade arrived on the scene two minutes later.

The fire which had broken out in the sub-basement, had already reached the basement in the vicinity of the revolving table, and abundant and heavy smoke was everywhere, particularly on the fifth and sixth floors, where the hospital was situated.

It is probable that the staff of the establishment lost time in calling help by endeavouring to extinguish the fire themselves.

The removal of the wounded had been commenced immediately by the hospital staff, and it was carried out without panic, thanks to the special fire drill previously practised.

In spite of the dense smoke the fire was immediately attacked from two sides of the basement. Access to the sub-basement being impossible from the interior of the stores, it was reached from the machinery room from which it was separated by two iron doors. As soon as these were opened it was seen that the whole of the sub-basement was in flames. By attacking the fire from this side it was possible to attempt its extinction, although its extent was about 700 square metres (7,534 sq. ft.).

Help arrived from all sides and further jets were got to work and breaches made in the walls of the machinery room, so that additional jets could be used in the sub-basement.

The fire became increasingly difficult to fight on account of the heat and smoke, which increased in intensity. For four hours it was confined to the basement, and it was hoped to save the rest of the building, but as all the floors were enveloped with hot gas saturated with hydro-carbons produced by the distillation of all the heated objects, this was impossible, and at about 3.10 a.m. there were violent cracklings heard and red lights appeared at all the windows, and in less than three minutes the entire building was involved.

Fear was entertained for the safety of the huge stores on the opposite side of the Rue du Bac, which was only 13 metres (43ft.)

wide. The revolving shutters of this building were lowered and men were placed at all the hydrants on this side of the fire.

An order was given to the firemen to leave the basements, and almost immediately afterwards the glazed halls and skylights fell in, carrying with them the galleries and some of the floors.



Fig. 4.—View of the Sixth Floor, used for administrative purposes in connection with the Hospital.

Fresh help was called and utilised as it arrived ; soon 60 jets were encircling the building, sending torrents of water into the enormous area and cooling the façade of the old stores.

Towards 4 a.m. the fire was in full force, at 6 a.m. it was getting less, and at about 8 a.m. there were only occasional flames, principally in the basement.

The collapse of the floors having taken place near the façade,



Fig.5.—View of the Hospital Ward on the Fifth Floor.

caused by the breaking of a column in the sub-basement, a fresh disaster was feared and the surroundings were cleared of firemen.

At about 8.50 a.m. hot and suffocating smoke spread over the basements of the older building adjoining, causing fear for its

safety. An inspection was made under great difficulty, which revealed the fact that the smoke came from the passages communicating with the sub and under sub-basements to the annexe, and these openings were promptly walled up with brick and plaster.



Fig. 6.—View of the wreckage of the roof over the Small Hall.

The extinction of the fire continued normally until the next day, at 10.30 a.m., when the fire was practically out.

A number of firemen remained on the premises until December 1st.

LOSS, DAMAGE AND SALVAGE.

From the commencement of the catastrophe the "Service de Protection" (the Brigade's own Salvage Corps) endeavoured to salve the goods from the different floors: 224 salvage sheets and covers were used, but these were nearly all destroyed.

The building is completely useless, the only portions undamaged



Fig. 8.—View of the interior wreckage.



Fig. 7.—Broken column in Basement.

are the rooms at the corner of the first and second floors, in which there was a collection of ancient carpets valued at more than 1,000,000 francs (£40,000); also the hydro-carbon store-room and the staircase to the hospital portion of the premises. The reinforced concrete tank in the cupola was also undamaged. All surrounding property was preserved. There were no casualties.

The damage is estimated at 14,000,000 francs (£560,000).

OBSERVATIONS.

This catastrophe presents, so far as the fire brigade was concerned, two phases :

The *first phase*, from 11.35 p.m., when the first help arrived, till 3.10 a.m., the conflagration then assumed the character of a violent subterranean fire which, owing to the efforts made and the apparent results, led the brigade to believe it was localised.

The *second phase*, from 3.10 a.m., when in about three minutes it assumed the character of a conflagration of the whole building, which threatened the immediate neighbourhood and particularly placed in danger the adjoining older Bon Marché premises not only from the exterior, on account of the radiation of heat, but from the underground communications.

During the first phase of the fire the firemen were unable to resist the thick smoke in the basement and elsewhere without the aid of respirators made of bandaging lint soaked in water. These very simple appliances were most efficacious.

From the point of view of the fire resistance, it has again been demonstrated that an unprotected framework of iron, both wrought and cast, does not offer any security.

The stanchions, in some cases composed of two channel irons rivetted together with an interior filling of masonry, offered little resistance to the fire and were twisted and bent by the heat.

The cast-iron columns on the upper floors were bent and fractured, and in the sub-basement one of them was broken off at the junction of the cap with the shaft (*see Fig. 7*), probably caused by cold water from a jet. It was the failure of this point, producing a vertical settlement of about 0.5 m. (*1 ft. 7½ in.*) in all the floors above, which caused fear of a collapse.

This opportunity is taken to point out the danger of underground communication with adjacent premises. Firstly, because proprietors make secondary openings unknown to the authorities, which they omit to provide with isolation shutters and, secondly, they do not rigorously observe the regulation which forbids the deposit of combustible materials in such underground communications, and sometimes it happens, as in this case, that it is impossible to close the revolving shutters in time. This happened to one of the fire shutters in the subway, the working parts of which were on the fire side of the burning basement. It is therefore desirable that these fire shutters should be capable of being lowered from both sides. The shutters that were lowered were kept cool by a constant stream of water, owing to their becoming very hot.

The possibility of providing smoke shafts from the basement to the roof should be considered, as otherwise the whole premises are rapidly filled with smoke, which is conducted by means of the staircases and lifts to all parts of the building, rendering the work of the firemen difficult and the evacuation of the building dangerous should a fire occur whilst it is occupied.

If the building had been of reinforced concrete, and the basement built in sections so as to isolate a fire, and, further, if all the

floors—especially the basements—had been protected by automatic sprinklers, the disaster might have been avoided.

The preventive measures previously mentioned for the isolation of the hospital from the rest of the building were fully efficacious,

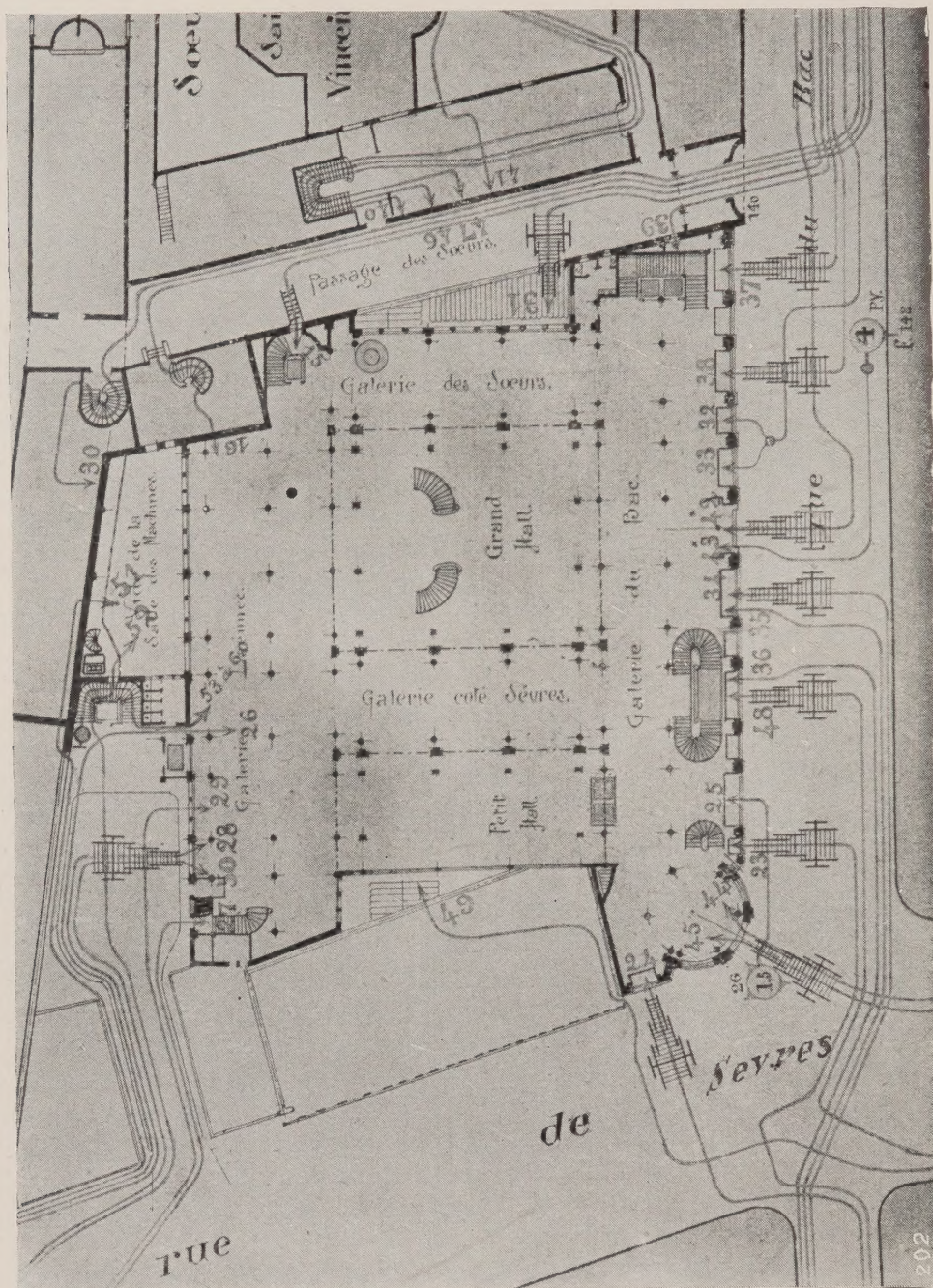


Fig. 9.—Plan shewing the Ground Floor of the building and the position of the fire ladders and jets.
(Old Bon Marché building)

and it was due to these that all the wounded were removed without accident, in spite of the fact that from the commencement of the fire the whole of the upper part of the building was enveloped in thick smoke.

It is to be noted that the turbine motor fire engines of the Paris Fire Brigade acted admirably. Several of them were run for thirty hours without a stop.

